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Recommendations for Refractive Error in Preverbal Children

Recomendações sobre refração em crianças pré-verbais

Recomendaciones sobre refracción en niños pre-verbales

Márcia Beatriz Tartarella. Universidade Federal de São Paulo - UNIFESP, São Paulo, SP, Brasil. tartarella@yahoo.com (Autor correspondente)
Rosane Cruz Ferreira. Oftalmologista Pediátrica - Universidade Federal de São Paulo - UNIFESP, São Paulo-SP, Brasil. rosaneferreira@hotmail.com
Islane Maria de Castro Verçosa. Oftalmologista Pediátrica - Hospital Geral de Fortaleza - HGF, Fortaleza, CE, Brasil. islaneverc@gmail.com
João Borges Fortes Filho. Faculdade de Medicina da Universidade Federal do Rio Grande do Sul - UFRGS, Porto Alegre, RS, Brasil. joaoborgesfortes@gmail.com

ABSTRACT

Uncorrected refractive errors in children may generate abnormalities in visual function and affect their future academic studies, as well as their neuromotor development. Refractive errors are easy to diagnose and correct. An ophthalmologic examination with visual acuity measurements should be performed to arrive at a diagnosis of refractive error. Lenses should then be prescribed which could minimize these serious consequences for childhood development.

RESUMO

Defeitos refrativos não corrigidos em crianças podem gerar alterações nas funções visuais e afetar sua educação acadêmica futura bem como o seu desenvolvimento neuropsicomotor. Erros refrativos são de fácil diagnóstico e correção. Deve ser realizado exame oftalmológico com testes de medição de acuidade visual, diagnóstico dos defeitos refrativos e a prescrição das lentes adequadas para minimizar essas importantes consequências no desenvolvimento da criança.

RESUMEN

Defectos refractivos no corregidos en niños pueden generar alteraciones en las funciones visuales y afectar su educación académica futura, así como su desarrollo neuropsicomotor. Errores refractivos son de fácil diagnóstico y corrección. Se debe realizar un examen oftalmológico con pruebas de medición de acuidad visual, diagnóstico de los defectos refractivos y la prescripción de los lentes adecuados para mitigar esas importantes consecuencias en el desarrollo del niño.

Keywords:
Refraction;
Ocular;
Child.

Palavras-Chave:
Refração Ocular;
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Palabras-clave:
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INTRODUCTION

Uncorrected refractive errors in children may generate abnormalities in visual function and may seriously affect their future academic studies, as well as their neuromotor development.

Refractive errors are easy to diagnose and correct. An ophthalmologic examination with visual acuity measurements should be performed to arrive at a diagnosis of refractive error. Lenses should then be prescribed which could minimize these serious consequences for childhood development.

Data from the International Agency for the Prevention of Blindness (IAPB) show that low visual acuity may affect approximately 5.5% of school-aged children, and that 80% of cases of low visual acuity in school-aged children can be corrected with eyeglasses alone.[1] A variety of previous studies, including many performed in different regions of Brazil, corroborate this international finding and reflect the need for refractive error to be addressed properly among Brazilian children. [2, 3, 4, 5, 6, 7, 8]

In 2007, the Brazilian Pediatric Ophthalmology Society (SBOP) performed a survey among its members and came to a consensus regarding prescription eyeglasses for preverbal children (defined as 0 to 3 years of age). The recommendations below are based upon studies referred to by the American Academy of Ophthalmology, and have been adapted for Brazil by the SBOP.[9]

RECOMMENDATIONS

The SBOP suggests that eyeglasses be prescribed to preverbal children in the following cases:

1. Children with myopia (without anisometropia)

- Children between 0 and 1 year of age: correct errors of -4.00 D or greater
- Children between 1 and 2 years of age: correct errors of -3.00 D or greater
- Children between 2 and 3 years of age: correct errors of -2.50 D or greater

2. Children with hypermetropy (ortophoric and without anisometropia)

- Children between 0 and 1 year of age: correct errors of +6.00 D or greater
- Children between 1 and 2 years of age: correct errors of +5.00 D or greater
- Children between 2 and 3 years of age: correct errors of +5.00 D or greater
- Reduce final prescription from 1.00 to 2.00 D

3. Children with hypermetropy (with accommodative esotropia of approximately 30 prism diopters)

- Children between 0 and 1 year of age: correct errors greater than +2.00 D
- Children between 1 and 2 years of age: correct errors greater than +2.00 D
- Children between 2 and 3 years of age: correct errors greater than +1.50 D
- Prescribe the entire refractive error in cases of cycloplegia. If this is greater than 3.00 D, the final refractive error can be reduced by 0.50 D.

4. Children with astigmatism (without anisometropia)

- Children between 0 and 1 year of age: correct errors greater than 2.50 D
- Children between 1 and 2 years of age: correct errors greater than 2.50 D

- Children between 2 and 3 years of age: correct errors greater than 2.00 D

5. Children with hypermetropic anisometropia

- Children between 0 and 1 year of age: correct errors of +2.00 D or greater
- Children between 1 and 2 years of age: correct errors of +1.50 D or greater
- Children between 2 and 3 years of age: correct errors of +1.50 D or greater

6. Children with myopic anisometropia

- Children between 0 and 1 year of age: correct errors of -2.50 D or greater
- Children between 1 and 2 years of age: correct errors of -2.50 D or greater
- Children between 2 and 3 years of age: correct errors of -2.50 D or greater

7. Children with astigmatic anisometropia

- Children between 0 and 1 year of age: correct errors of 2.00 D or greater
- Children between 1 and 2 years of age: correct errors of 1.50 D or greater
- Children between 2 and 3 years of age: correct errors of 1.50 D or greater

OTHER RECOMMENDATIONS

- The use of unbreakable hardened (polycarbonate) lenses is recommended for children with monocular vision, even in cases without refractive error. This will minimize risks of trauma to the only seeing eye.

- Children older than four years of age can participate in subjective tests to decide the best correction to be prescribed.

- These recommendations or suggestions may be modified on a case by case basis and always depending on the rest of the patient's clinical data.

- In patients with refractive amblyopia (which affects 1% to 4% of the population), the error should be treated with eyeglasses and occlusion therapy (as per the patching protocol) until 10 years of age.

- In patients with oblique astigmatism, which further compromises visual development, errors of 1.50 D or greater should be corrected.

- Children's eyes should also be protected by the use of eyeglasses with filters that protect against the phototoxicity generated by UVA/UVB radiation from both the atmosphere and devices which emit electromagnetic waves, such as computers, TVs, cell phones, laptops, microwaves, indoor lighting (cold or blue spectrum lights), and other common electronic equipment. This protection should be encouraged by ophthalmologists, who should make parents and guardians aware of the fact that this exposure may cause the formation of early cataracts and may also predispose patients to age-related macular degeneration (ARMD).[10,11]

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Márcia Beatriz Tartarella

http://orcid.org/0000-0003-2361-3355

http://lattes.cnpq.br/6983200921618896

Rosane Cruz Ferreira

http://orcid.org/0000-0001-7321-2344

http://lattes.cnpq.br/8546157422253354